cPCI-3620 Series

Performance 3U CompactPCI®
Quad-Core Intel® Atom™ Processor Blade

User's Manual

Manual Rev.: 0.10 Preliminary

Revision Date: July 4, 2014

Part No: 50-15098-1000

Recycled Paper

Advance Technologies; Automate the World.

Revision History

Revision	Release Date	Description of Change(s)
0.10	04/07/2014	Preliminary release

Preface

Copyright 2014 ADLINK Technology Inc.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

Disclaimer

The information in this document is subject to change without prior notice in order to improve reliability, design, and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Environmental Responsibility

ADLINK is committed to fulfill its social responsibility to global environmental preservation through compliance with the European Union's Restriction of Hazardous Substances (RoHS) directive and Waste Electrical and Electronic Equipment (WEEE) directive. Environmental protection is a top priority for ADLINK. We have enforced measures to ensure that our products, manufacturing processes, components, and raw materials have as little impact on the environment as possible. When products are at their end of life, our customers are encouraged to dispose of them in accordance with the product disposal and/or recovery programs prescribed by their nation or company.

Trademarks

Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.

Additional information, aids, and tips that help users perform tasks.

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

Table of Contents

Revision History ii

Preface iii

List of Figures vii

List of Tables ix

1 Introduction 1

1.1 Overview 1
1.2 Features 2
1.3 Model Number Decoder 3
1.4 Package Contents 5

2 Specifications 7

2.1 cPCI-3620 Processor Blade Specifications 7
2.2 cPCI-R3610(T) RTM Specifications 9
2.3 Block Diagrams 10
2.4 I/O Connectivity Table 13
2.5 Power Requirements 14

3 Functional Description 17

3.1 Processors 17
3.2 PMC/XMC 19
3.3 Intel® Virtualization Technology 19
3.4 Intel® AES New Instructions 19
3.5 Battery 20

4 Board Interfaces 21

4.1 cPCI-3620 Series Board Layout 21
4.2 cPCI-3620 Blade Assembly Layout 22

4.3 cPCI-3620D Blade Assembly Layout 23
4.4 cPCI-3620T Blade Assembly Layout 24
4.5 cPCI-3620N Blade Assembly Layout 25
4.6 cPCI-3620 Series Faceplate 26
4.7 cPCI-R3610(T) RTM Board Layout 29
4.8 cPCI-R3610(T) RTM Faceplate 30
4.9 Connector Pin Assignments 31
4.10 Jumper Settings 49

5 Getting Started 51
5.1 CPU and Heatsink 51
5.2 SATA Drive Installation 52
5.3 PMC/XMC Card Installation 54
5.4 Installing the cPCI-3620 to the Chassis 55
5.5 RTM Installation - cPCI-R3610(T) 56

6 Driver Installation 57
6.1 cPCI-3620 Drivers 57

7 Utilities 59
7.1 SEMA 59
7.2 Preboot Execution Environment (PXE) 60

Important Safety Instructions 61

Getting Service 63

List of Figures

Figure 2-1: cPCI-3620 Blade Functional Block Diagram..... 10
Figure 2-2: DB-3610L2 Daughter Board Func. Block Diagram..... 11
Figure 2-3: DB-3620L2 Daughter Board Func. Block Diagram..... 11
Figure 2-4: cPCI-R3610 RTM Functional Block Diagram 12
Figure 4-1: cPCI-3620 Series Board Layout 21
Figure 4-2: cPCI-3620 Blade Assembly Layout 22
Figure 4-3: cPCI-3620D Blade Assembly Layout..... 23
Figure 4-4: cPCI-3620T Blade Assembly Layout 24
Figure 4-5: cPCI-3620N Blade Assembly Layout..... 25
Figure 4-6: cPCI-3620, cPCI-3620D/N Front Panel Layout 26
Figure 4-7: cPCI-3620T, cPCI-3620S Front Panel Layout..... 27
Figure 4-8: cPCI-R3610(T) RTM Board Layout 29
Figure 4-9: cPCI-R3610(T) RTM Front Panel 30

This page intentionally left blank.

List of Tables

Table 2-1: cPCI-3620 Processor Blade Specifications 7
Table 2-2: cPCI-R3610(T) RTM Specifications..... 9
Table 2-3: cPCI-3620 I/O Connectivity 13
Table 4-1: cPCI-3620 Front Panel System LED Descriptions 28
Table 4-2: USB 2.0 Pin Definition 31
Table 4-3: VGA Pin Definition 32
Table 4-4: PS/2 Keyboard/Mouse Pin Definition..... 32
Table 4-5: RJ-45 GbE Pin Definitions 33
Table 4-6: LAN Status LED Definitions..... 33
Table 4-7: RJ-45 GbE Pin Definitions 34
Table 4-8: cPCI-3620D/T COM1 (DB-9) Pin Definition..... 34
Table 4-9: cPCI-3620D COM1 Mode Selection Switch Settings 35
Table 4-10: Serial ATA Connector on DB-3610L2 Pin Definition..... 37
Table 4-11: DB-3610L2 Connector Pin Definition..... 38
Table 4-12: DB-3SSD Connector Pin Definition 39
Table 4-13: PMC Connector Pin Definitions 40
Table 4-14: XMC Connector Pin Definition 42
Table 4-15: CompactPCI J1 Connector Pin Definition..... 43
Table 4-16: CompactPCI J2 Connector Pin Definition..... 44
Table 4-17: cPCI-R3610(T) Serial Port Pin Header Definition..... 45
Table 4-18: cPCI-R3610(T) COM2/3 (DB-9) Pin Definition 45
Table 4-19: COM2 Mode Selection Switch Settings 46
Table 4-20: COM3 Mode Selection Switch Settings 47
Table 4-21: Serial ATA Connector on RTM 48
Table 4-22: XMC VPWR Select Jumper Settings 49
Table 4-23: PMC V(I/O) Select Jumper Settings 49

This page intentionally left blank.

1 Introduction

1.1 Overview

The ADLINK cPCI-3620 Series is a 3U CompactPCI® processor blade featuring a quad-core 4th generation Intel® Atom SOC and soldered DDR3L-1333 ECC memory up to 4GB.

Available in single-slot (4HP) or dual-slot (8HP) width form factors, the cPCI-3620 Series utilizes various daughter boards to provide a broad range of I/O functionality. Front panel I/O on the single-slot (4HP) version includes 1x USB 3.0, 2x RJ-45 GbE and 1x VGA port (common to all versions). Front panel I/O on the dual-slot (8HP) version includes additional 2x USB 2.0, 1x COM, 1x PS/2 KB/MS and Line-in/Line-out on the cPCI-3620D or additional 2x GbE via MIL-STD M12 connectors and 1x COM on the cPCI-3620T. Another dual-slot option is the cPCI-3620S with an additional XMC site on layer 2. There is also a single-slot option that provides LED indicators only with no I/O on the front panel (cPCI-3620N).

Graphics support is integrated on the SOC. Storage options include an onboard 32GB SSD (optional) and 2.5" SATA drive on layer 2 riser card (cPCI-3620D/T). One optional PCI 32-bit/66 MHz PCIe x1 XMC site is available on the dual-slot cPCI-3620S version.

Rear I/O signals to J2 include 2x GbE, 1x VGA, 1x USB 2.0, 2x COM, 1x SATA 3 Gb/s, providing for expansion with an optional Rear Transition Module (RTM).

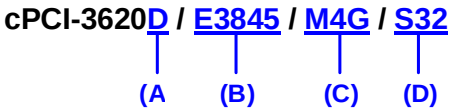
The cPCI-3620 is an ideal solution for transportation, military, factory automation and other industrial applications that require optimal computing performance for data transfer with lower power consumption. The ADLINK cPCI-3620 provides high manageability, supports Satellite mode operation as a standalone blade in peripheral slots, and features ADLINK's Smart Embedded Management Agent (SEMA) for system health monitoring.

1.2 Features

- 3U CompactPCI blade in 4HP or 8HP width form factor
- 4th Generation Intel® Atom™ Processor E3845 SOC (4 cores, 2M L3 cache, 1.9 GHz) and Intel® Atom™ Processor E3827 SOC (2 cores, 1M L3 cache, 1.75 GHz)
- Graphics and memory controllers integrated in SOC
- Compatible with PICMG 2.3 CompactPCI R3.0 and PICMG 2.1 Hot Swap R2.0
- Single channel DDR3L-1333 soldered SDRAM with ECC up to 4GB
- 32-bit, 33/66MHz CompactPCI interface, universal V(I/O)
- Supports Satellite mode operation as a standalone blade in peripheral slots
- Optional 32-bit, 66MHz PCIe x1 XMC site
- Supports SEMA for system health monitoring
- VGA port on front panel switchable to rear I/O by BIOS setting
- 2x GbE ports on front panel switchable to rear I/O by BIOS setting
- Additional 2x GbE via MIL-STD M12 connectors on 8HP model (cPCI-3620T)
- 2x USB 2.0, 1x COM and 1x PS/2 KB/MS on front panel
- Line-in and Line-out on front panel (cPCI-3620D)
- Optional onboard SATA SSD
- 2.5” SATA 3 Gb/s direct connector on 8HP version (cPCI-3620D/T)

1.3 Model Number Decoder

Blades



(A) Configuration Code

- **Blank** = Single-slot width, 1x VGA, 1x USB 3.0, 2x GbE
- **D** = Dual-slot width, 1x VGA, 1x USB 3.0, 2x GbE on layer 1; 2x USB 2.0, 1x COM (RS-232/422/485), 1x PS/2 KB/MS, Line-in, Line-out and 2.5" SATA drive space on layer 2 DB-3610L2
- **T** = Dual-slot width, 1x VGA, 1x USB 3.0, 2x GbE on layer 1; 2x GbE via MIL-STD M12 connectors, 1x COM (RS-232/422/485), and 1x 2.5" SATA drive space on layer 2 DB-3620L2
- **S** = Dual-slot width, 1x VGA, 1x USB 3.0, 2x GbE on layer 1; XMC site on layer 2 DB-3UMC.
- **N** = Single-slot width, no I/O ports on layer 1.

(B) CPU Code

- **E3845** = Quad-core Intel® Atom™ Processor E3845 SOC
- **E3827** = Dual-core Intel® Atom™ Processor E3827 SOC

(C) Memory Size Code

- **M2G** = 1x 2GB DDR3L-1333 soldered ECC SDRAM
- **M4G** = 1x 4GB DDR3L-1333 soldered ECC SDRAM

(C) Daughter Board Storage Device Code*

- Blank = default with no soldered onboard SSD
- S32 = soldered onboard 32GB SSD

*For more options, contact your ADLINK representative.

RTMs

cPCI- R3610T

(A)

(A) Model Code

- **Blank** = Dual-slot width, 50mm depth 3U RTM with 2x COM, 1x USB 2.0, 1x SATA 3Gb/s, 1x VGA, 2x GbE
- **T** = Dual-slot width, 80mm depth 3U RTM with 2 x COM, 1x USB 2.0, 1x SATA 3Gb/s, 1x VGA, 2x GbE

NOTE:

2x GbE, 1x VGA and 1x SATA signals on RTM are switched from front panel of blade.

1.4 Package Contents

The cPCI-3620 is packaged with the following components. If any of the following items are missing or damaged, retain the shipping carton and packing material and contact the dealer for inspection. Please obtain authorization before returning any product to ADLINK. The packing contents of cPCI-3620 Series non-standard configurations will vary depending on customer requests.

CPU module

- The cPCI-3620 Series Processor Blade
  - CPU and memory specifications will differ depending on options selected
  - Thermal module is assembled on the board
- Y-cable for PS/2 combo port (8HP version only)
- 2.5" SATA drive accessory pack (8HP version only)
- ADLINK All-in-One DVD
- User's manual

Rear Transition Module

- cPCI-R3610: 8HP width, 50mm depth Rear Transition Module with 2x COM, 1x USB 2.0, 2x GbE, 1x SATA, 1x VGA
- cPCI-R3610T: 8HP width, 80mm depth Rear Transition Module with 2x COM, 1x USB 2.0, 2x GbE, 1x SATA, 1x VGA

The contents of non-standard cPCI-3620 configurations may vary depending on the customer's requirements.

This product must be protected from static discharge and physical shock. Never remove any of the components except at a static-free workstation. Use the anti-static bag shipped with the product when putting the board on a surface. Wear an anti-static wrist strap properly grounded on one of the system's ESD ground jacks when installing or servicing system components.

This page intentionally left blank.

2 Specifications

2.1 cPCI-3620 Processor Blade Specifications

CompactPCI® Standards	• PICMG® 2.0 CompactPCI® Rev. 3.0 • PICMG® 2.1 Hot Swap Specification Rev. 2.0
Mechanical	• Standard 3U CompactPCI® • Board size: 100mm x 160mm • Single slot (4HP, 20.32mm); Dual slot (8HP, 40.64mm)
Processor	• Intel® Atom™ Processor E3845, quad-core, 1.91 GHz, 2MB cache, TDP 10W • Intel® Atom™ Processor E3827, dual-core, 1.75 GHz, 1MB cache, TDP 8W • Passive heatsink
Memory	• Single channel DDR3L-1333 ECC soldered memory, up to 4GB
CompactPCI Bus	• PCI 32-bit, 33/66MHz; 3.3V, 5V universal V I/O • Supports operation in system slot as master or in peripheral slot as standalone blade without connectivity to CompactPCI bus (Satellite mode)
Gigabit Ethernet	• Two PCIe x1 Intel® I210 Gigabit Ethernet controllers (2 additional GbE by M12 connectors optional) • Two egress 10/100/1000BASE-T ports on front panel • Two egress 10/100/1000BASE-T ports routed to rear transition module (switched from front panel)
Graphics	• Integrated on Intel® Atom™ processor • VGA on front panel switchable to J2 (RTM) by BIOS setting • Analog support up to QXGA 2560x1600 @60Hz, 32-bit • Single display
USB	• Up to three USB front panel ports (cPCI-3620D)
Serial Ports	• One RS-232/422/485 serial port on front panel • cPCI-3620D supports RS-485+ • cPCI-3620T supports RS-485 with flow control
PMC/XMC	• One 32-bit/66MHz PMC site or PCIe x1 XMC site (cPCI-3620S)
Audio	• Line-in/Line-out on front panel by Realtek ALC262 High Definition Audio codec (cPCI-3620D only)
Storage Interfaces[1]	• Optional onboard 32GB SSD on daughter board • One SATA 3Gb/s direct connector for 2.5" drive (8HP version)
BIOS	• AMI® EFI BIOS, 64Mbit SPI flash memory

Table 2-1: cPCI-3620 Processor Blade Specifications

Faceplate I/O	**4HP (cPCI-3620)** • 1x USB 3.0 port • 2x 10/100/1000BASE-T Ethernet ports • 1x VGA port **4HP (cPCI-3620N)** • LEDs only (Power, HDD, WDT, GP, GbE), no I/O **8HP (cPCI-3620D)** • 1x USB 3.0 ports • 2x 10/100/1000BASE-T Ethernet ports • 1x VGA port • 2x USB 2.0 ports • DB-9 RS-232/422/485 port • PS/2 Keyboard/Mouse combo port • Line-in and Line-out port **8HP (cPCI-3620T)** • 1x USB 3.0 ports • 2x 10/100/1000BASE-T Ethernet ports • 1x VGA port • 2x GbE via MIL-STD M12 ports • DB-9 RJ-45 RS-232/422/485 port **8HP (cPCI-3620S)** • 1x USB 3.0 ports • 2x 10/100/1000BASE-T Ethernet ports • 1x VGA port • PMC/XMC site
OS Compatibility	• Microsoft Windows 7 32/64-bit • Microsoft Windows 8 32/64-bit • Red Hat Enterprise Linux 6.5, 64-bit • Fedora 20, 64-bit • VxWorks 6.9 • Other OS support upon request
Environmental	• Operating Temperature[1]: Standard: -40°C to 70°C (fanless) Extreme: -40°C to +85°C (forced air flow) • Storage Temperature: -50°C to 100°C • Humidity: 95% @60°C non-condensing • Shock: 20G peak-to-peak, 11ms duration, non-operating • Vibration[2]: 2Grms, 5-500Hz, each axis, operating (w/o hard drive)
EMI	• EN55022 • EN50155 • FCC Class A

Table 2-1: cPCI-3620 Processor Blade Specifications

1. The storage device limits the operational vibration tolerance. When the application requires higher specification for anti-vibration, it is recommended to use a flash storage device.
2. ADLINK-certified thermal design. The thermal performance is dependent on the chassis cooling design. Sufficient forced air-flow is required. Temperature limits of optional mass storage devices may also affect the thermal specification.

2.2 cPCI-R3610(T) RTM Specifications

Mechanical	Board Size • cPCI-R3610: 100mm x 50mm • cPCI-R3610T: 100mm x 80mm Dual-slot (8HP, 40.64mm) (optional single slot upon request)
Gigabit Ethernet	• Two GbE ports switched from cPCI-3620
Graphics	• VGA switched from cPCI-3620
Serial Ports	• Two serial ports on I/O panel from pin header
Storage Interfaces	• One 7-pin Serial ATA port (SATA1 signal switched from cPCI-3620 by BIOS
Faceplate I/O	• 1x USB 2.0 ports • 2x 10/100/1000BASE-T Ethernet ports • Analog DB-15 VGA port • 2x COM ports

Table 2-2: cPCI-R3610(T) RTM Specifications

NOTE:

Specifications are subject to change without prior notice.

2.3 Block Diagrams

cPCI-3620 Blade

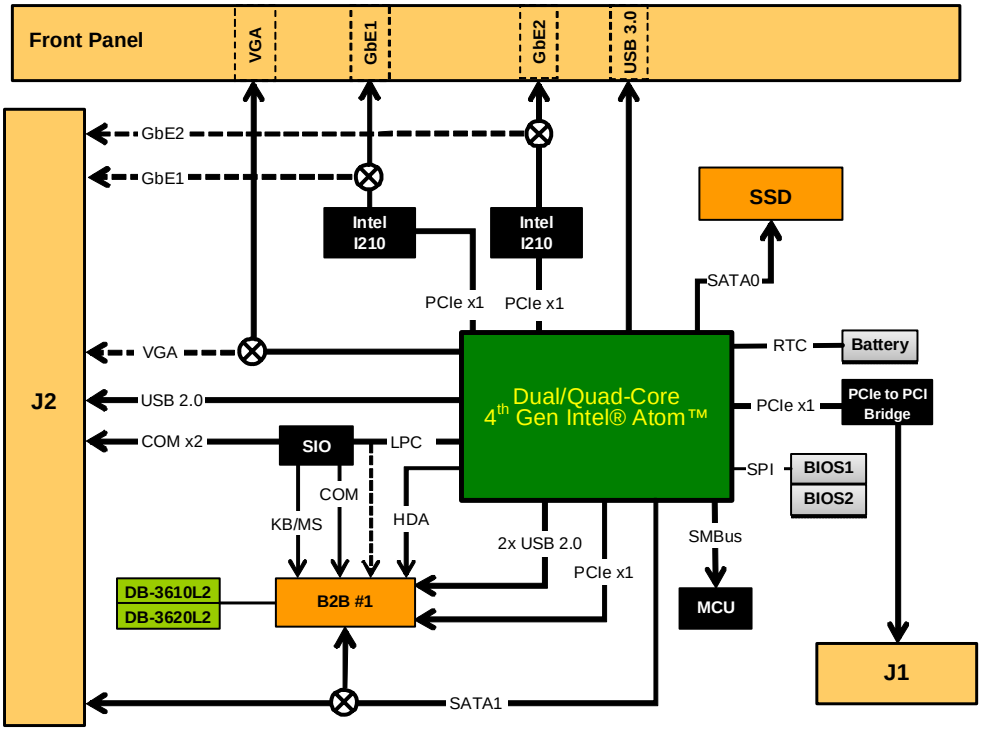


Figure 2-1: cPCI-3620 Blade Functional Block Diagram

DB-3610L2 Daughter Board

cPCI-3620D version

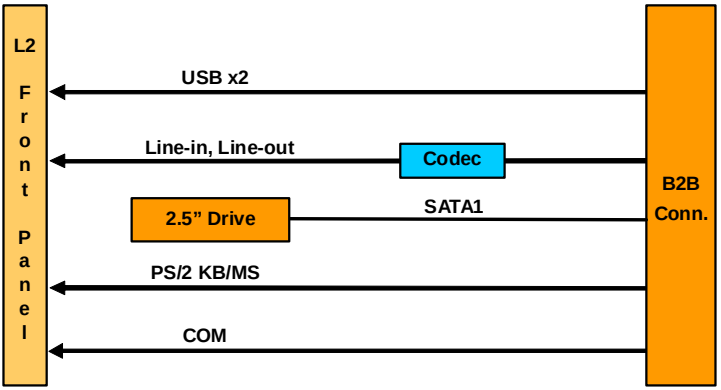


Figure 2-2: DB-3610L2 Daughter Board Functional Block Diagram

DB-3620L2 Daughter Board

cPCI-3620T version

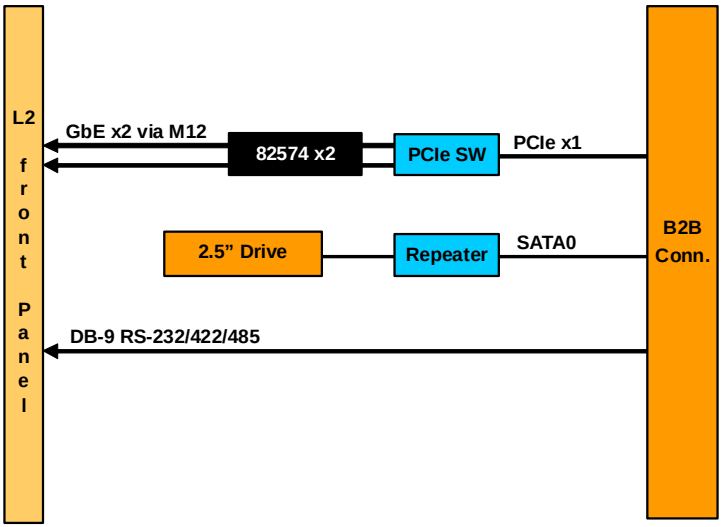


Figure 2-3: DB-3620L2 Daughter Board Functional Block Diagram

cPCI-R3610(T) RTM

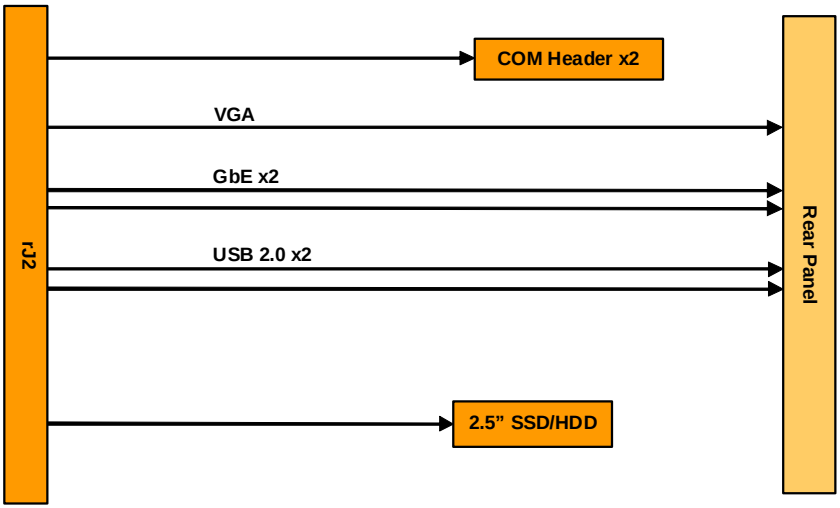


Figure 2-4: cPCI-R3610 RTM Functional Block Diagram

2.4 I/O Connectivity Table

Function	cPCI-3620 (4HP)		cPCI-362D (8HP)		cPCI-3620T (8HP)	
	Faceplate	Onboard	Faceplate	Onboard	Faceplate	Onboard
Gigabit Ethernet	Y x2		Y x2		Y x2	
COM			Y (DB-9)		Y (DB-9)	
USB 3.0	Yx1		Yx1		Yx1	
USB 2.0			Y x2			
VGA	Y		Y		Y	
Serial ATA				Y (for 2.5" drive)		Y (for 2.5" drive)
PS/2 KB/MS			Y			
Line-in			Y			
Line-out			Y			
LED	Y x5		Y x5		Y x5	
Reset Button	Y		Y		Y	

Table 2-3: cPCI-3620 I/O Connectivity

Function	cPCI-3620S (8HP)		R3610(T) (RTM)	
	Faceplate	Onboard	Faceplate	Onboard
Gigabit Ethernet	Y x2		Y x2(1)	
COM			Y x2	
USB 3.0	Y x1			
USB 2.0			Y x2	
VGA	Y		Y(2)	
Serial ATA				Y x1 (7-pin)(3)
PS/2 KB/MS				
Line-in				
Line-out				
PMC/XMC	Y	Y		
LED	Y x5			
Reset Button	Y			

Table 2-3: cPCI-3620 I/O Connectivity (cont'd)

1. Switched from front panel by BIOS setting.
2. VGA switched from front panel by BIOS setting.
3. SATA1 signal switched from cPCI-3620 by BIOS; SATA2 not connected.

2.5 Power Requirements

In order to guarantee a stable functionality of the system, it is recommended to provide more power than the system requires. **An industrial power supply unit should be able to provide at least twice as much power as the entire system requires of each voltage**. An ATX power supply unit should be able to provide at least three times as much power as the entire system requires of each voltage.

The tolerance of the voltage lines described in the CompactPCI specification (PICMG 2.0 R3.0) is +5%/-3% for 5, 3.3 V and ±5% for ±12V. This specification is for power delivered to each slot and it includes both the power supply and the backplane tolerance.

Voltage	Nominal Value	Tolerance	Max. Ripple (P - P)
5V	+5.0 VDC	+5% / -3%	50 mV
3.3V	+3.3 VDC	+5% / -3%	50 mV
+12V	+12 VDC	+5% / -5%	240 mV
-12V	-12 VDC	+5% / -5%	240 mV
V I/O (PCI I/O Buffer Voltage)	+3.3 VDC or +5 VDC	+5% / -3%	50 mV
GND			

Power Consumption

This section provides information on the power consumption of cPCI-3620 Series when using the Intel® Atom™ i7 processors with 4GB DDR3L-1333 ECC soldered memory and a 2.5" SATA SSD. The cPCI-3620 is powered by 5V. Power consumption at 100% CPU usage was measured using the Intel Thermal Analysis Tool (TAT).

Intel® Atom™ E3845 (quad-core)		
OS/Mode	**Current 5V**	**Total Power**
DOS/Idle mode	1.82 A	9.1 W
Windows 8/Idle mode	1.71 A	8.55 W
Windows 8/Typical	2.7A	13.5W
Windows 8/100% CPU usage	3.0 A	15 W

Intel® Atom™ E3827 (dual-core)		
OS/Mode	**Current 5V**	**Total Power**
DOS/Idle mode	1.65 A	8.25 W
Windows 8/Idle mode	1.63 A	8.15 W
Windows 8/Typical	2.62 A	13.1W
Windows 8/100% CPU usage	2.85 A	14.25 W

NOTE:

Connecting a USB device with an external power supply (e.g. a powered USB hub) to the cPCI-3620 may result in an unintended boot up from a shutdown state. This is due to the low power requirements of the "Bay Trail" CPU and 5V power design of the cPCI-3620.

This page intentionally left blank.

3 Functional Description

The following sections describe the cPCI-3620 Series features and functions.

3.1 Processors

The cPCI-3620 Series supports the Intel® Atom™ processor E3845 and E3827 which utilize 22nm process technology with 3-D Tri-Gate transistor to deliver significant improvement in computational performance and energy-efficiency in intelligent systems. Based on a new micro-architecture, the processor is designed for a one-chip platform. This system-on-chip (SoC) solution platform brings enhanced graphics, greater performance, lower cost, easier validation, and improved x-y footprint to a broad range of intelligent systems. The processor includes an Integrated Display Engine, Processor Graphics and Integrated Memory Controller.

Features	Atom™ E3845	Atom™ E3827
Clock	1.91GHz	1.75GHz
L2 Cache	2MB	1MB
No. of Cores/Threads	4/4	2/2
Max. Power (TDP[1])	10W	8W
$T_{junction, MAX}$[2]	110°C	110°C

1. The highest expected sustainable power while running known power intensive applications. TDP is not the maximum power that the processor can dissipate.
2. The maximum supported operating temperature.

Supported Technologies

Features	Atom™ E3845	Atom™ E3827
Intel® vPro Technology	No	No
Intel® Hyper-Threading Technology	No	No
Intel® Virtualization Technology	Yes	Yes
Intel® Virtualization Technology for Directed I/O	No	No
Intel® 64 Architecture	Yes	Yes
Intel® HD Audio Technology	Yes	Yes
Intel® Data Protection Technology – Intel® AES New Instructions	Yes	Yes
Intel® Trusted Execution Technology	No	No
Intel® Execute Disable Bit	Yes	Yes

Interfaces

- Single channel of DDR3L-1333 memory
- Memory DDR3 data transfer rates of 1333 MT/s
- ECC soldered memory
- Maximum 4GB memory capacity supported
- 64-bit wide channels
- DDR3L I/O Voltage of 1.35V
- PCI Express port(s) are fully-compliant with the PCI Express Base Specification, Revision 2.0

Graphics

The graphics is integrated in the processor and based on Intel® HD Graphics 4000 technology, enabling substantial gains in performance and lower power consumption.

- DirectX 11 support
- OpenGL 4.0 support
- Graphics Base Frequency: 542 MHz
- Graphics Max Dynamic Frequency: 792 MHz
- Full HD video playback
- Maximum resolution of 2560x1600@60Hz

3.2 PMC/XMC

The cPCI-3620S models support one PMC or XMC site for front panel I/O expansion. The PMC site provides a maximum 32-bit/66MHz PCI bus link using a Pericom PI7C9X130 PCI-Express-to-PCI bridge and PCI-Express x1 link. The PMC site supports +3.3V signaling only. The XMC site provides a PCI-Express x1 lane.

3.3 Intel® Virtualization Technology

Intel® Virtualization Technology (VT-x) allows one hardware platform to function as multiple “virtual” platforms. It offers improved manageability by limiting downtime and maintaining productivity by isolating computing activities into separate partitions. Hardware-based Intel® Virtualization Technology (Intel® VT-x) improves the fundamental flexibility and robustness of traditional software-based virtualization solutions by accelerating key functions of the virtualized platform. This efficiency offers benefits to the IT, embedded developer, and intelligent systems communities.

3.4 Intel® AES New Instructions

Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI) is a new encryption instruction set that improves on the Advanced Encryption Standard (AES) algorithm and accelerates the encryption of data in the Intel Atom Processor E3800 product family. Encryption is frequently recommended as the best way to

secure business-critical data, and AES is the most widely used standard when protecting network traffic, personal data, and corporate IT infrastructures. AES is a widely-deployed encryption standard when protecting network traffic, personal data, and corporate IT infrastructures; and Intel® AES-NI can be used to accelerate the AES encryption.

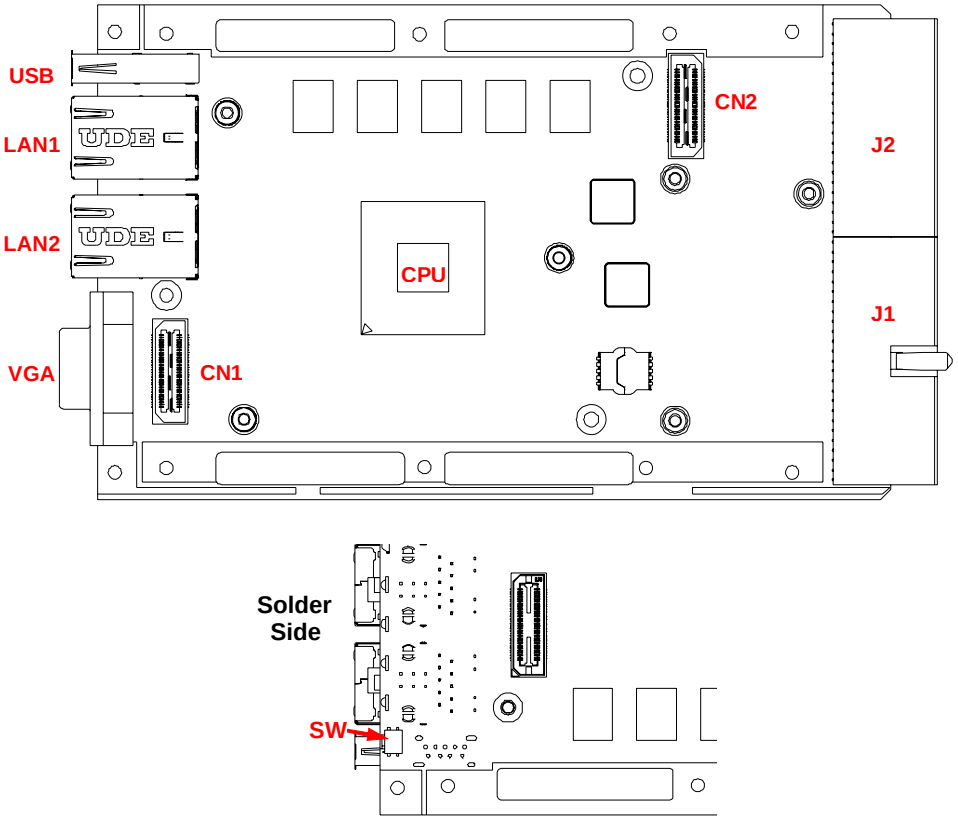
3.5 Battery

The cPCI-3620 is provided with a 3.0V “coin cell” lithium battery for the Real Time Clock (RTC). The battery sockets are located on the DB-3NSSD/B/NTPM and DB-3SSD daughter boards. The battery must be replaced with an identical battery or a battery type recommended by the manufacturer. A Rayovac BR2032 is equipped on board by default, and a Gold Capacitor (Panasonic EECS5R5H105) is optionally available.

4 Board Interfaces

This chapter illustrates the board layout, connector pin assignments, and jumper settings.

4.1 cPCI-3620 Series Board Layout



CPU	Intel® Atom™ Processor	**USB**	USB 3.0 port
CN1	L2 daughter board connector	**LAN1**	Ethernet RJ-45 connector
CN2	DB-3SSD connector	**LAN2**	Ethernet RJ-45 connector
J1	CompactPCI connector J1	**VGA**	DB-15 female VGA connector
J2	CompactPCI connector J2	**SW**	Reset Button

Figure 4-1: cPCI-3620 Series Board Layout

4.2 cPCI-3620 Blade Assembly Layout

This section describes the final assembly layout of the single slot cPCI-3620 blade with the DB-3SSD daughter board.

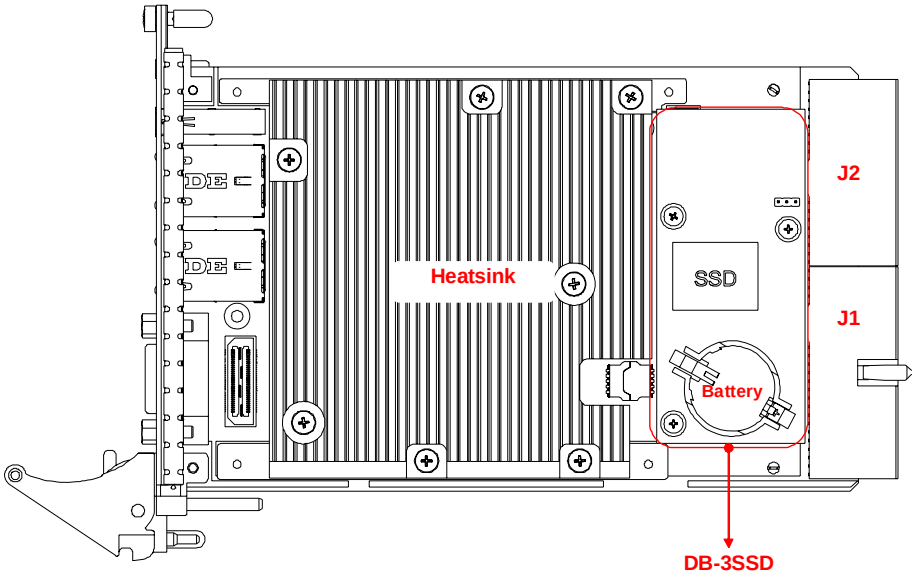
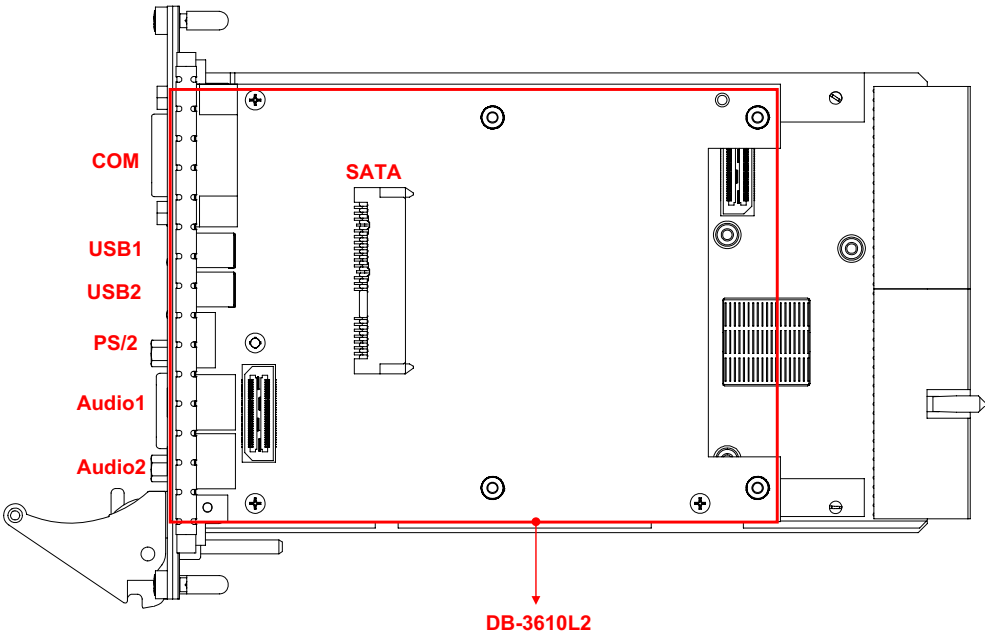


Figure 4-2: cPCI-3620 Blade Assembly Layout

BT1	Battery	**J1**	CompactPCI connector J1
		J2	CompactPCI connector J2

4.3 cPCI-3620D Blade Assembly Layout

The dual-slot width cPCI-3620D is comprised of the cPCI-3620 single-slot main board and the DB-3610L2 riser card to expand I/O connectivity with PS/2, COM, 2x USB, Line-in, and Line-out ports.

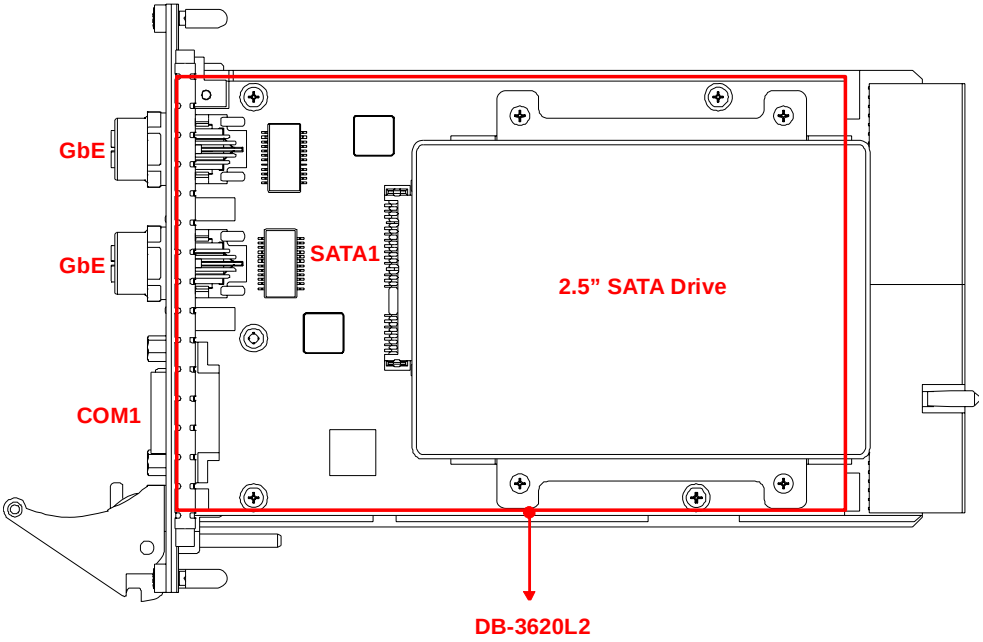


COM	DB-9 COM port	**Audio1**	Line-out port
USB1/2	USB 2.0 connectors	**Audio2**	Line-in port
PS/2	PS/2 KB/MS Combo port	**SATA**	22-pin SATA connector

Figure 4-3: cPCI-3620D Blade Assembly Layout

4.4 cPCI-3620T Blade Assembly Layout

The dual-slot width cPCI-3620T is comprised of the cPCI-3620 single-slot main board and the DB-3620L2 riser card to expand I/O connectivity with COM, 2x GbE with M12 MIL-STD connectors



GbE	M12 MIL-STD connectors	**COM1**	DB-9 COM port
SATA1	22-pin SATA connector		

Figure 4-4: cPCI-3620T Blade Assembly Layout

4.5 cPCI-3620N Blade Assembly Layout

The single slot cPCI-3620N provides LED indicators only with no I/O on the front panel

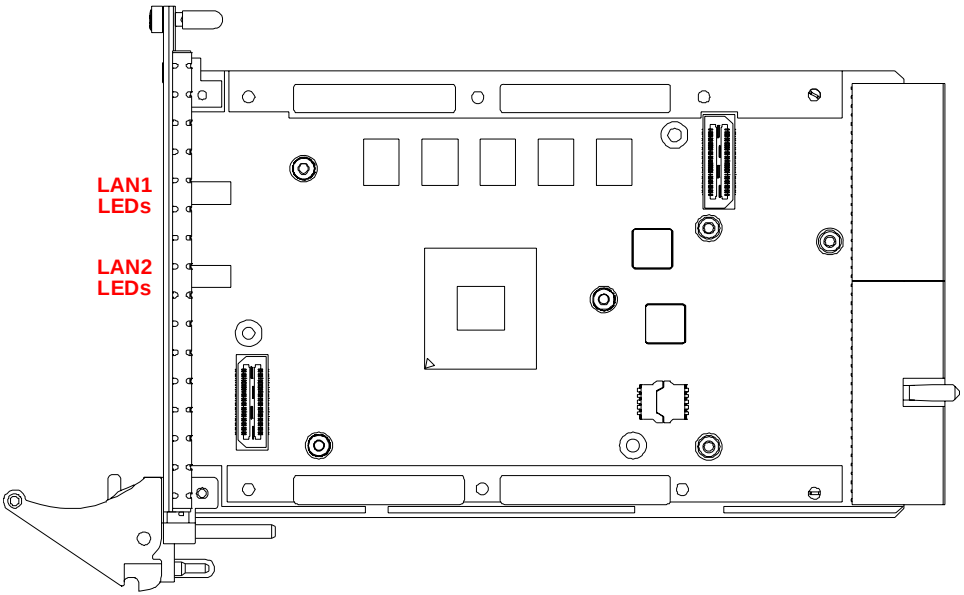


Figure 4-5: cPCI-3620N Blade Assembly Layout

4.6 cPCI-3620 Series Faceplate

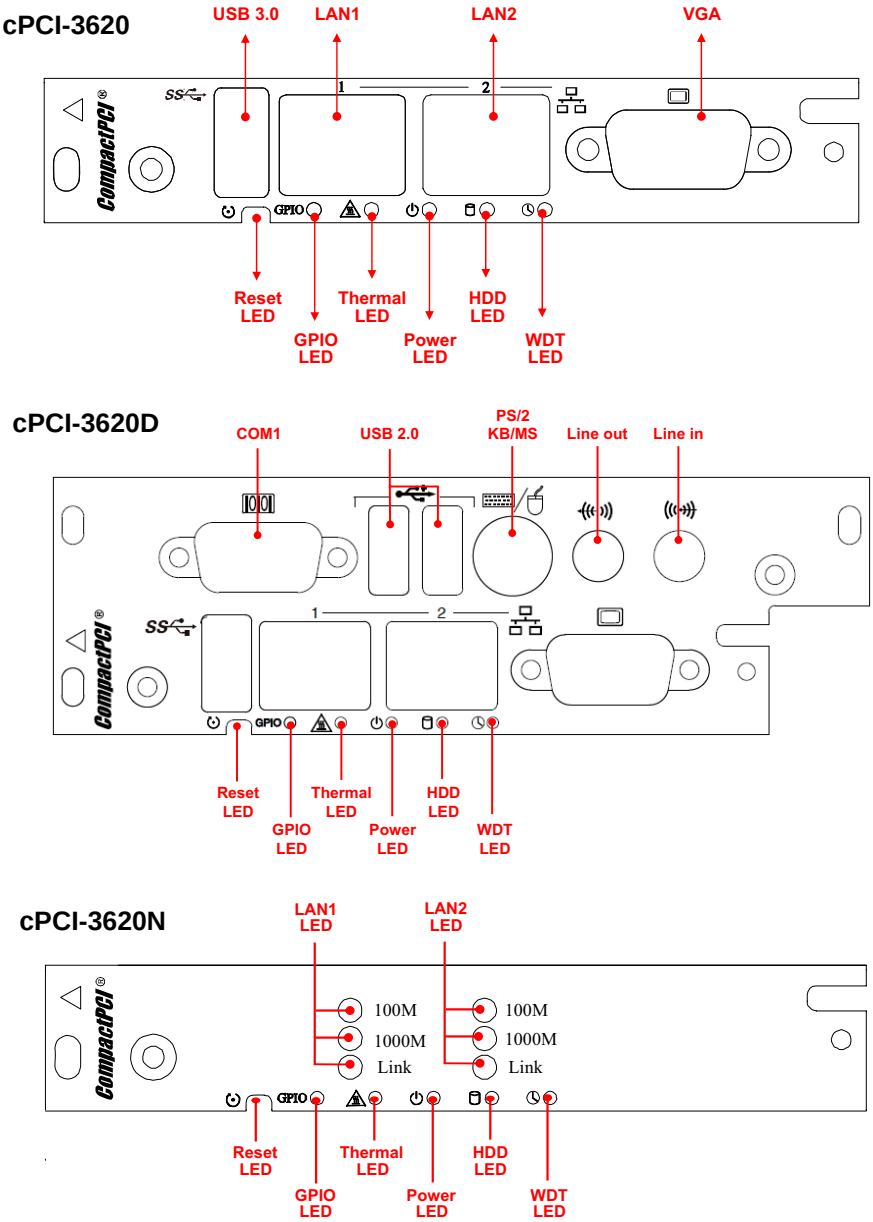
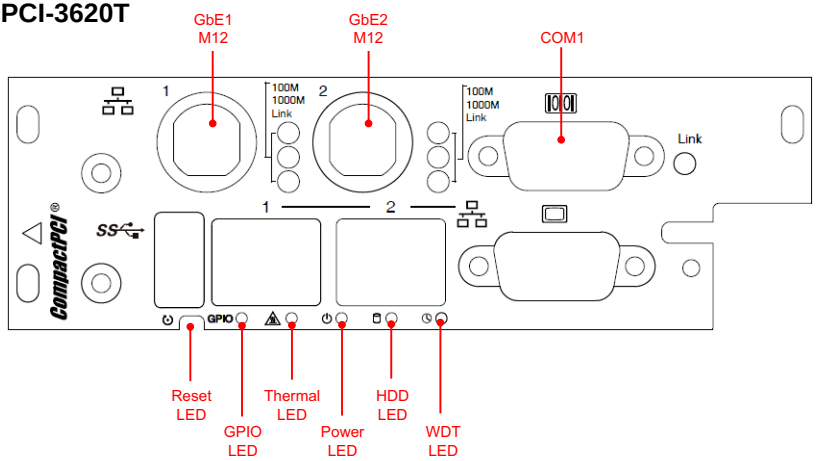


Figure 4-6: cPCI-3620, cPCI-3620D, cPCI-3620N Front Panel Layout

cPCI-3620T



cPCI-3620S

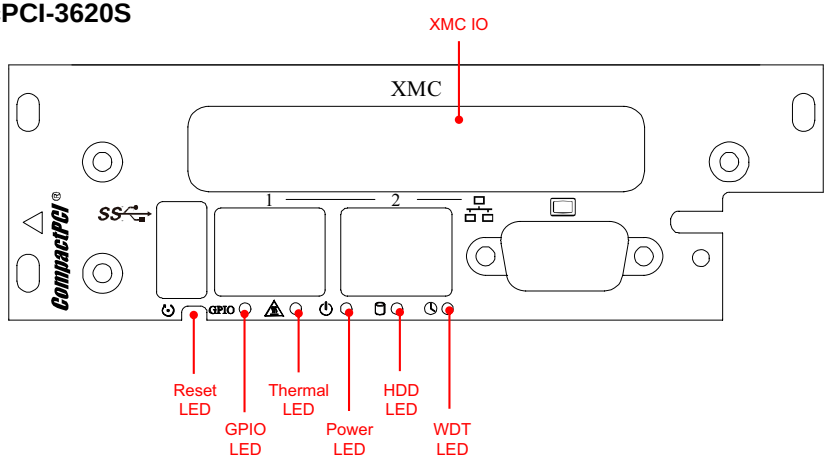


Figure 4-7: cPCI-3620T, cPCI-3620S Front Panel Layout

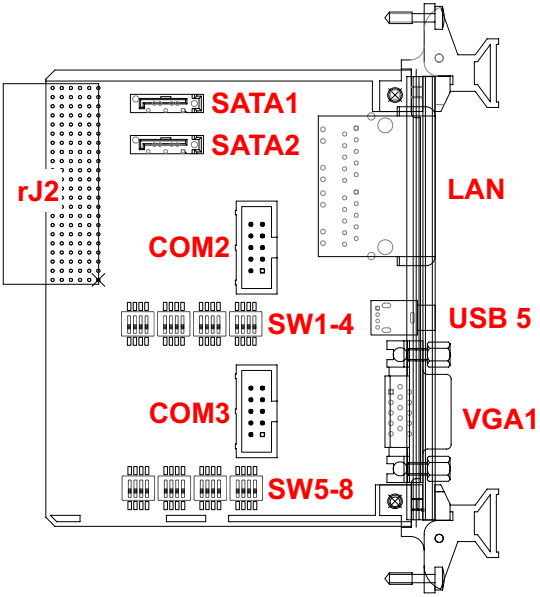
System LEDs

LED	Color	Condition	Indication
Power[1]	Green/ Red	OFF	System is off
		Green	Post OK
WDT[2]	Orange	OFF	No Watchdog event
		Blinking	Watchdog event alert
HDD[3]	Blue	OFF	No SATA drive activity
		Blinking	Data read/write in process for CF/CFast/ SATA HDD
Thermal[4]	Red	OFF	Board temperature is below 85°C
		ON	Board temperature equals or exceeds 85°C
GPIO[5]	Yellow	OFF	Defined by user
		ON/Blinking	Defined by user

Table 4-1: cPCI-3620 Front Panel System LED Descriptions

1. Power LED is controlled by hardware power.
2. WDT LED is controlled by BMC (SEMA), and users can define it using SEMA.
3. HDD LED is controlled by the SoC.
4. Thermal LED is controlled by BMC (SEMA); the system will continue to operate when the LED is triggered.
5. GPIO LED is controlled by BIOS.

4.7 cPCI-R3610(T) RTM Board Layout



COM2	RS-232/422/485 port	**LAN1/2**	Dual Ethernet ports
COM3	RS-232/422/485 port	**VGA1**	VGA port
SATA1	SATA port switched from front by BIOS (SATA2 not connected)	**USB**	USB 2.0 port
rJ2	CompactPCI connector	**SW1-8**	Switches

(cPCI-R3610 is 50mm deep and cPCI-R3610T is 80mm deep)

Figure 4-8: cPCI-R3610(T) RTM Board Layout

4.8 cPCI-R3610(T) RTM Faceplate

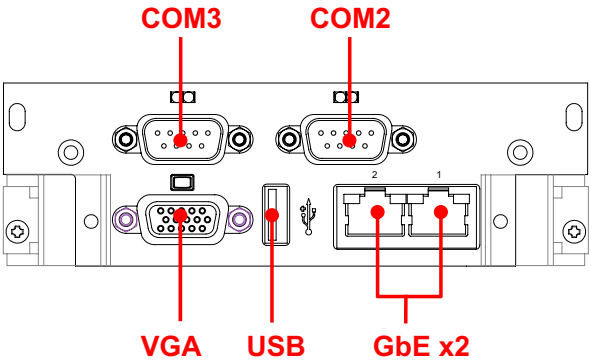


Figure 4-9: cPCI-R3610(T) RTM Front Panel

4.9 Connector Pin Assignments

USB 2.0 Connectors

Pin #	Signal Name
1	Vcc
2	UV0-
3	UV0+
4	GND

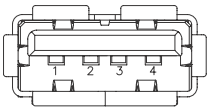
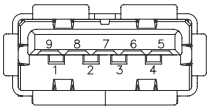


Table 4-2: USB 2.0 Pin Definition

USB 3.0 Connectors

Pin #	Signal Name
1	USB3.0_P5VA
2	USB2_CMAN
3	USB2_CMAP
4	GND
5	USB3A_CMRXN
6	USB3A_CMRXP
7	GND
8	USB3A_CMTXN
9	USB3A_CMTXP



DB-15 VGA Connector

Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
+5V.	9	10	GND
N.C.	11	12	CRTDATA
HSYNC	13	14	VSYNC
CRTCLK	15		

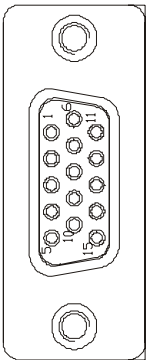


Table 4-3: VGA Pin Definition

PS/2 Keyboard/Mouse Connector

Pin #	Signal	Function
1	KBDATA	Keyboard Data
2	MSDATA	Mouse Data
3	GND	Ground
4	+5V	Power
5	KBCLK	Keyboard Clock
6	MSCLK	Mouse Clock

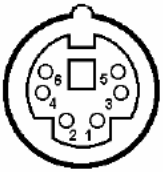
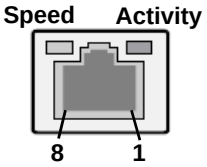


Table 4-4: PS/2 Keyboard/Mouse Pin Definition

RJ-45 Gigabit Ethernet Connectors

Pin #	10BASE-T/ 100BASE-TX	1000BASE-T
1	TX+	LAN_TX0+
2	TX-	LAN_TX0-
3	RX+	LAN_TX1+
4	—	LAN_TX2+
5	—	LAN_TX2-
6	RX-	LAN_TX1-
7	—	LAN_TX3+
8	—	LAN_TX3-

Table 4-5: RJ-45 GbE Pin Definitions



Status		Speed LED (Green/Amber)	Activity LED (Yellow)
Network link is not established or system powered off		Off	Off
10 Mbps	Link	Off	On
	Active	Off	Blinking
100 Mbps	Link	Green	On
	Active	Green	Blinking
1000 Mbps	Link	Orange	On
	Active	Orange	Blinking

Table 4-6: LAN Status LED Definitions

M12 Gigabit Ethernet Connectors

Pin #	Signal
1	DN3
2	DP3
3	DN2
4	DP2
5	DN1
6	DP1
7	DN0
8	DP0

Table 4-7: RJ-45 GbE Pin Definitions

cPCI-3620D/T Serial Ports

COM1 Connector (DB-9)

Pin #	RS-232	RS-422	RS-485(+)
1	DCD-L	TXD-	TXD-
2	RXD	TXD+	TXD+
3	TXD	RXD+	—
4	DTR-L	RXD-	—
5	GND	GND	GND
6	DSR-L	—	—
7	RTS-L	—	—
8	CTS-L	—	—
9	RI-L	—	—

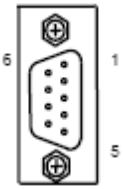


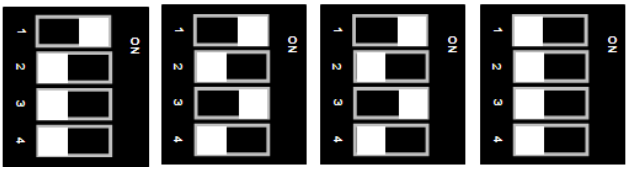
Table 4-8: cPCI-3620D/T COM1 (DB-9) Pin Definition

NOTE:

The COM mode setting for cPCI-3620D models is set using SW1~SW4. See *"cPCI-3620D COM1 Mode Selection Switches (SW1~SW4)" on page 35*. The COM mode setting for cPCI-3620T models is set using SW1. See *"cPCI-3620T COM1 Mode Selection Switch (SW1)" on page 36*.

cPCI-3620D COM1 Mode Selection Switches (SW1~SW4)

These switches set the cPCI-3620D COM1 to RS-232 full modem, RS-422, RS-485, or RS-485+ half-duplex mode. Switches SW1~SW4 are located on the top edge of the DB-3610L2 board. RS-232 full modem is set by default.



SW1 SW2 SW3 SW4

Mode	Pin	SW1	SW2	SW3	SW4
RS-232	1	ON	ON	ON	OFF
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	ON	OFF
	4	OFF	OFF	OFF	OFF
RS-422	1	OFF	OFF	OFF	ON
	2	ON	ON	ON	OFF
	3	OFF	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485	1	OFF	OFF	OFF	ON
	2	OFF	ON	ON	OFF
	3	ON	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485+	1	OFF	OFF	OFF	OFF
	2	OFF	ON	ON	ON
	3	ON	OFF	OFF	OFF
	4	OFF	ON	ON	ON

Table 4-9: cPCI-3620D COM1 Mode Selection Switch Settings

cPCI-3620T COM1 Mode Selection Switch (SW1)

These switches set the cPCI-3620T COM1 to RS-232 full modem, RS-422 or RS-485. Switch SW1 is located next to the COM1 connector on the DB-3620L2 board. RS-232 full modem is set by default.

SW1

Mode	Pin	SW1
RS-232	1	ON
	2	OFF
RS-422	1	ON
	2	ON
RS-485	1	OFF
	2	ON

Serial ATA Connector on DB-3610L2

Pin #	Signal
S1	GND
S2	TX+
S3	TX-
S4	GND
S5	RX-
S6	RX+
S7	GND
P1	NC
P2	NC
P3	NC
P4	GND
P5	GND
P6	GND
P7	5V
P8	5V
P9	5V
P10	GND
P11	NC
P12	GND
P13~P15	NC

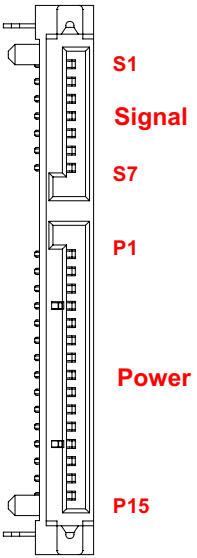


Table 4-10: Serial ATA Connector on DB-3610L2 Pin Definition

DB-3610L2/DB-3620L2/DB-3UMC Connector (CN1)

Signal Name	Pin #	Pin #	Signal Name
USB2-N	1	2	-12V
USB2-P	3	4	+12
GND	5	6	GND
USB3-N	7	8	HDA_SDIN0
USB3-P	9	10	HDA_R_SDOUT
GND	11	12	GND
SATA_ICH_RX-N0	13	14	HDA_R_SYNC
SATA_ICH_RX-P0	15	16	HDA_R_BIT_CLK
GND	17	18	GND
SATA_TX-P0	19	20	CK_L2_PCIE1-P
SATA_TX-N0	21	22	CK_L2_PCIE1-N
GND	23	24	GND
PCIE_TXN5	25	26	CK_L2_PCIE2-P
PCIE_TXP5	27	28	CK_L2_PCIE2-N
GND	29	30	GND
PCIE_RXN5	31	32	HDA_R_RST-L
PCIE_RXP5	33	34	SPKR
GND	35	36	L2_PCIE_RST-L
PCIE_RXN4	37	38	NC
PCIE_RXP4	39	40	USB_2_3_OC-L
GND	41	42	COM1_DCD-L
PCIE_TXN4	43	44	COM1_RI-L
PCIE_TXP4	45	46	COM1_CTS-L
GND	47	48	COM1_DTR-L
MSCLK	49	50	COM1_RTS-L
MSDATA	51	52	COM1_DSR-L
KBCLK	53	54	COM1_SOUT
KBCDATA	55	56	COM1_SIN
P5V	57	58	+3.3V
P5V	59	60	+3.3V

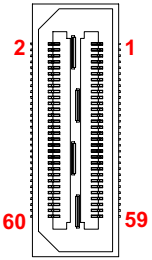


Table 4-11: DB-3610L2 Connector Pin Definition

DB-3SSD Connector (CN2)

Signal Name	Pin #	Pin #	Signal Name
PCH_SPKR	1	2	CLK33_TPM
SIO_SPKR	3	4	LPC_FRAME-L
GND	5	6	TPM_RST-L
CN_VCC_RTC	7	8	LPC_AD3
GND	9	10	LPC_AD2
NC	11	12	LPC_AD1
NC	13	14	LPC_AD0
NC	15	16	TPM_LPCPD
NC	17	18	PCH_SERIRQ
NC	19	20	TPM_CLKRUN
NC	21	22	TPM_GPIO
NC	23	24	NC
NC	25	26	NC
NC	27	28	NC
NC	29	30	NC
NC	31	32	NC
NC	33	34	NC
NC	35	36	NC
GND	37	38	NC
SATA_PCH_RX-N0	39	40	NC
SATA_PCH_RX-P0	41	42	NC
GND	43	44	NC
SATA_PCH_TX-N0	45	46	NC
SATA_PCH_TX-P0	47	48	NC
GND	49	50	NC
Reserved	51	52	NC
Reserved	53	54	NC
GND	55	56	NC
P5V	57	58	P3V3
P5V	59	60	P3V3

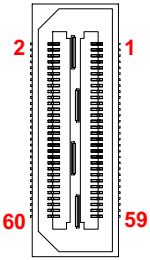


Table 4-12: DB-3SSD Connector Pin Definition

PMC Connector on DB-3UMC (JN1/2)

Pin#	JN1 Signal	JN2 Signal
1	PMC_TCK	P12V
2	N12V	PMC_TRST-L
3	GND	PMC_TMS
4	PCIX_INTA-L	NC (PMC_TDO)
5	PCIX_INTB-L	PMC_TDI
6	PCIX_INTC-L	GND
7	PMC_MOD-L1	GND
8	P5V	NC
9	PCIX_INTD-L	NC
10	NC	NC
11	GND	PMC_MOD-L2
12	P3V3_PMCAUX	P3V3
13	CLK66_PCIX_PMC	PMC_RST-L
14	GND	PMC_MOD-L3
15	GND	P3V3
16	PCIX_GNT-L0	PMC_MOD-L4
17	PCIX_REQ-L0	PMC_PME-L
18	P5V	GND
19	PMC_VIO	PCIX_AD30
20	PCIX_AD31	PCIX_AD29
21	PCIX_AD28	GND
22	PCIX_AD27	PCIX_AD26
23	PCIX_AD25	PCIX_AD24
24	GND	PCIX_AD23
25	GND	PMC_IDSEL
26	PCIX_CBE-L3	PCIX_AD23
27	PCIX_AD22	P3V3
28	PCIX_AD21	PCIX_AD20
29	PCIX_AD19	PCIX_AD18
30	P5V	GND
31	PCIX_FRAME-L	PCIX_AD16
32	PCIX_AD17	PCIX_CBE-L2

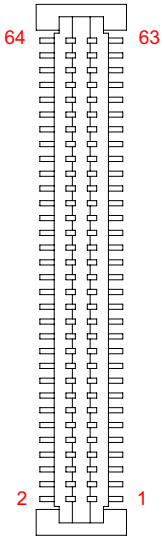
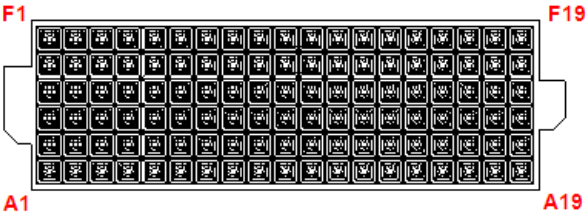


Table 4-13: PMC Connector Pin Definitions

Pin#	JN1 Signal	JN2 Signal
33	PCIX_FRAME-L	GND
34	GND	NC
35	GND	PCIX_TRDY-L
36	PCIX_IRDY-L	P3V3
37	PCIX_DEVSEL-L	GND
38	P5V	PCIX_STOP-L
39	PCIX_PCIXCAP	PCIX_PERR-L
40	PCIX_LOCK-L	GND
41	NC	P3V3
42	NC	PCIX_SERR-L
43	PCIX_PAR	PCIX_CBE-L1
44	GND	GND
45	PMC_VIO	PCIX_AD14
46	PCIX_AD15	PCIX_AD13
47	PCIX_AD12	PCIX_M66EN
48	PCIX_AD11	PCIX_AD10
49	PCIX_AD9	PCIX_AD8
50	P5V	P3V3
51	GND	PCIX_AD7
52	PCIX_CBE-L0	NC
53	PCIX_AD6	P3V3
54	PCIX_AD5	NC
55	PCIX_AD4	NC
56	GND	GND
57	PMC_VIO	NC
58	PCIX_AD3	NC
59	PCIX_AD2	GND
60	PCIX_AD1	NC
61	PCIX_AD0	PCIX_ACK64-L
62	P5V	P3V3
63	GND	GND
64	PCIX_REQ64-L	NC

Table 4-13: PMC Connector Pin Definitions (cont'd)

XMC Connector on DB-3UMC (JN3)



Pin#	A	B	C	D	E	F
1	RXP	RXN	3.3V	NC	NC	VPWR
2	GND	GND	Not used	GND	GND	PCIE_RST-L
3	NC	NC	3.3V	NC	NC	VPWR
4	GND	GND	Not used	GND	GND	Not used
5	NC	NC	3.3V	NC	NC	VPWR
6	GND	GND	Not used	GND	GND	+12V
7	NC	NC	3.3V	NC	NC	VPWR
8	GND	GND	Not used	GND	GND	-12V
9	NC	NC	Not used	NC	NC	VPWR
10	GND	GND	Not used	GND	GND	GA0
11	TXP	TXN	Not used	NC	NC	VPWR
12	GND	GND	GA1	GND	GND	Not used
13	NC	NC	3.3V	NC	NC	VPWR
14	GND	GND	GA2	GND	GND	Not used
15	NC	NC	Not used	NC	NC	VPWR
16	GND	GND	Not used	GND	GND	Not used
17	NC	NC	Not used	NC	NC	NC
18	GND	GND	Not used	GND	GND	Not used
19	CK-P	CK-N	Not used	Not used	Not used	Not used

Table 4-14: XMC Connector Pin Definition

CompactPCI J1 Connector

Pin	Z	A	B	C	D	E	F
25	GND	+5V	REQ64#	ENUM#	+3.3V	+5V	GND
24	GND	CPCI_AD1	+5V	CPCI_VIO	CPCI_AD0	ACK64#	GND
23	GND	P3V3	CPCI_AD4	CPCI_AD3	P5V	CPCI_AD2	GND
22	GND	CPCI_AD7	GND	P3V3	CPCI_AD6	CPCI_AD5	GND
21	GND	P3V3	CPCI_AD9	CPCI_AD8	CPCI_M66EN	CPCI_CBE-L0	GND
20	GND	CPCI_AD12	GND	VIO	CPCI_AD11	CPCI_AD10	GND
19	GND	P3V3	CPCI_AD15	CPCI_AD14	GND	CPCI_AD13	GND
18	GND	CPCI_SERR-L	GND	P3V3	CPCI_PAR	CPCI_CBE-L1	GND
17	GND	P3V3	NC	NC	GND	CPCI_PERR-L	GND
16	GND	CPCI_DEVSEL-L	CPCI_PCIXCAP	VIO	CPCI_STOP-L	CPCI_LOCK-L	GND
15	GND	P3V3	CPCI_FRAME-L	CPCI_IRDY-L	NC	CPCI_TRDY-L	GND
12-14	Key						
11	GND	CPCI_AD18	CPCI_AD17	CPCI_AD16	GND	CPCI_CBE-L2	GND
10	GND	CPCI_AD21	GND	P3V3	CPCI_AD20	CPCI_AD19	GND
9	GND	CPCI_CBE-L3	NC	CPCI_AD23	GND	CPCI_AD22	GND
8	GND	CPCI_AD26	GND	VIO	CPCI_AD25	CPCI_AD24	GND
7	GND	CPCI_AD30	CPCI_AD29	CPCI_AD28	GND	CPCI_AD27	GND
6	GND	CPCI_REQ-L0	GND	P3V3	CPCI_CLK0	CPCI_AD31	GND
5	GND	NC	NC	CPCI_RESET-L	GND	CPCI_GNT-L0	GND
4	GND	NC	CPCI_HEALTHY-L	VIO	NC	NC	GND
3	GND	CPCI_IRQA-L	CPCI_IRQB-L	CPCI_IRQC-L	P5V	CPCI_IRQD-L	GND
2	GND	cPCI_TCK-L	P5V	cPCI_TMS-L	NC	cPCI_TDI-L	GND
1	GND	P5V	NC	cPCI_TRST-L	P12V	P5V	GND

Table 4-15: CompactPCI J1 Connector Pin Definition

CompactPCI J2 Connector

Pin	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
21	GND	CLK6	GND	LAN1_TXDP0	LAN1_TXDN0	Reserved	GND
20	GND	CLK5	GND	LAN1_TXDP2	GND	R_LAN2_1000-L	GND
19	GND	GND	GND	LAN1_TXDN2	LAN1_TXDP1	LAN1_TXDN1	GND
18	GND	R_LAN2_100-L	LAN1_TXDP3	LAN1_TXDN3	GND	P3V3	GND
17	GND	R_LAN2_LINK/ACT-L	GND	PRSTJ	REQ6#	GNT6#	GND
16	GND	GPIO0	R_LAN1_100-L	USB6-P	GND	R_LAN1_1000-L	GND
15	GND	RGB_BLUE	R_LAN1_LINK/ACT-L	USB6-N	REQ5#	GNT5#	GND
14	GND	GPIO1	USB_6_OC#	USB_5_OC#	SATA_TX-N1	COM2_RI#	GND
13	GND	LAN2_TXDP0	GND	SATA_TX-P1	COM2_DTR#	COM2_CTS#	GND
12	GND	GPIO2	LAN2_TXDN0	USB5-P	SATA_RX-N1	COM2_SOUT	GND
11	GND	LAN2_TXDP1	GND	SATA_RX-P1	COM2_RTS#	COM2_SIN	GND
10	GND	GPIO3	LAN2_TXDN1	USB5-N	GND	COM2_DSR#	GND
9	GND	VSY	GND	RGB_GREEN	COM2_DCD#	COM3_RI#	GND
8	GND	HSY	LAN2_TXDP2	LAN2_TXDN2	GND	COM3_DTR#	GND
7	GND	RGB_RED	GND	+5V	COM3_CTS#	COM3_SOUT	GND
6	GND	DDC_CLK	LAN2_TXDP3	LAN2_TXDN3	GND	CON3_RTS#	GND
5	GND	DDC_DAT	GND	HDD_LED	COM3_SIN	COM3_DSR#	GND
4	GND	V(I/O)	Power_LED	WDT_LED	GP_LED	COM3_DCD#	GND
3	GND	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	GND	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	GND	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

Table 4-16: CompactPCI J2 Connector Pin Definition

COM port
VGA (shared w/ GPIO pins 4-7 by switch selection)
LEDs
USB port
Rear LAN LEDs
LAN ports
Serial ATA

CompactPCI J2 Connector Legend

cPCI-R3610(T) RTM Serial Ports

Serial Port Pin Headers (COM2/3)

Pin #	RS-232	RS-422	RS-485(+)
1	DCD-L	TXD-	TXD-
2	DSR-L	—	—
3	RXD	TXD+	TXD+
4	RTS-L	—	—
5	TXD	RXD+	—
6	CTS-L	—	—
7	DTR-L	RXD-	—
8	RI-L	—	—
9	GND	GND	GND
10	—	—	—

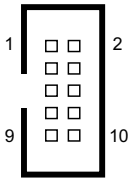


Table 4-17: cPCI-R3610(T) Serial Port Pin Header Definition

Serial Port DB-9 Connectors (COM2/3)

Pin #	RS-232	RS-422	RS-485(+)
1	DCD-L	TXD-	TXD-
2	RXD	TXD+	TXD+
3	TXD	RXD+	—
4	DTR-L	RXD-	—
5	GND	GND	GND
6	DSR-L	—	—
7	RTS-L	—	—
8	CTS-L	—	—
9	RI-L	—	—

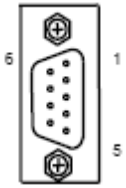
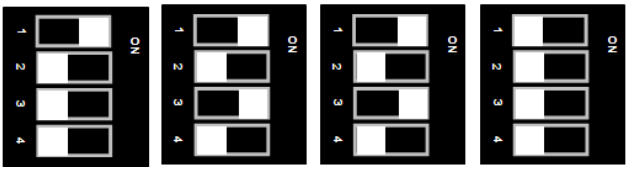


Table 4-18: cPCI-R3610(T) COM2/3 (DB-9) Pin Definition

COM2 Mode Selection Switches on RTM (SW1~SW4)

These switches on the RTM select COM2 to be RS-232 full modem, RS-422, RS-485, or RS-485+ half-duplex mode. RS-232 full modem is set by default. See “cPCI-R3610(T) RTM Board Layout” on page 29 for switch locations.



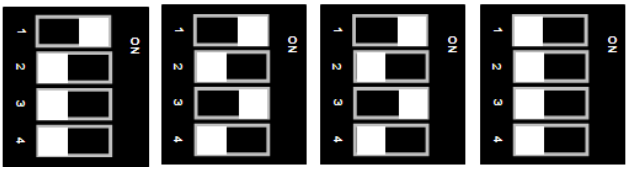
SW1 **SW2** **SW3** **SW4**

Mode	Pin	SW1	SW2	SW3	SW4
RS-232	1	OFF	ON	ON	ON
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	ON	OFF
	4	OFF	OFF	OFF	OFF
RS-422	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	ON
	3	ON	OFF	OFF	OFF
	4	OFF	ON	ON	OFF
RS-485	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	OFF
	3	ON	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485+	1	OFF	OFF	OFF	OFF
	2	ON	ON	ON	OFF
	3	OFF	OFF	OFF	ON
	4	ON	ON	ON	OFF

Table 4-19: COM2 Mode Selection Switch Settings

COM3 Mode Selection Switches on RTM (SW5~SW8)

These switches on the RTM select COM3 to be RS-232 full modem, RS-422, RS-485, or RS-485+ half-duplex mode. RS-232 full modem is set by default. See “cPCI-R3610(T) RTM Board Layout” on page 29 for switch locations.



SW5 SW6 SW7 SW8

Mode	Pin	SW5	SW6	SW7	SW8
RS-232	1	OFF	ON	ON	ON
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	ON	OFF
	4	OFF	OFF	OFF	OFF
RS-422	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	ON
	3	ON	OFF	OFF	OFF
	4	OFF	ON	ON	OFF
RS-485	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	OFF
	3	ON	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485+	1	OFF	OFF	OFF	OFF
	2	ON	ON	ON	OFF
	3	OFF	OFF	OFF	ON
	4	ON	ON	ON	OFF

Table 4-20: COM3 Mode Selection Switch Settings

Serial ATA Connectors on RTM

Pin #	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

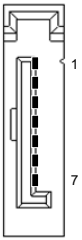


Table 4-21: Serial ATA Connector on RTM

4.10 Jumper Settings

XMC VPWR Select Jumper on DB-3UMC (JPX1)

This jumper is located on the DB-3UMC board near JN1/2 and selects the XMC VPWR setting. 5V is set by default.

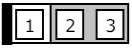
Mode	Connection	JPX1
+5V (Default)	1 – 2	
+12V	2 – 3	

Table 4-22: XMC VPWR Select Jumper Settings

PMC V(I/O) Select Jumper on DB-3UMC (JPX2)

This jumper is located on the DB-3UMC board near JN1/2 and selects the PMC V(I/O) setting. 3.3V is set by default.

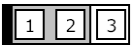
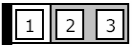
Mode	Connection	JPX2
+5V	1 – 2	
+3.3V (Default)	2 – 3	

Table 4-23: PMC V(I/O) Select Jumper Settings

This page intentionally left blank.

5 Getting Started

This chapter describes the following installation procedures for the cPCI-3620 and rear transition module:

- CPU and Heatsink
- 2.5" SATA storage drive
- PCI Mezzanine Card
- Processor blade installation to chassis
- RTM installation to chassis

5.1 CPU and Heatsink

The cPCI-3620 Series come with CPU and heatsink pre-installed. Removal of heatsink/CPU by users is not recommended. Please contact your ADLINK service representative for assistance.

5.2 SATA Drive Installation

The cPCI-3620D/P/L/M 2/3-slot versions provide space to install a slim type 2.5" Serial-ATA storage drive.

Installing a SATA Drive - cPCI-3620D/T

1. A 2.5" SATA drive can be assembled in the location marked as below.

2. 2.Prepare a 2.5" SATA drive and locate the brackets and screws in the accessory kit.

3. Screw the brackets to the 2.5" SATA drive with the four with M3 screws provided.

4. Align the drive assembly with the cPCI-3620 and insert it into the onboard SATA connector until it is properly seated.

5. Secure the hard drive assembly to the cPCI-3620 with four M2.5 screws provided.

5.3 PMC/XMC Card Installation

The cPCI-3620S provides one PMC/XMC slot designed to support 3.3V or 5V V(I/O) (default 3.3V) and 5V or 12V VPWR (default 5V). Before you install the PMC/XMC card on the cPCI-3620S, please make sure that the PMC V(I/O) jumper JPX2 and XMC VPWR jumper JPX1 on the DB-3UMC daughter board have been correctly set.

5.4 Installing the cPCI-3620 to the Chassis

The cPCI-3620 may be installed in a system or peripheral slot of a 3U CompactPCI chassis. These instructions are for reference only. Refer to the user guide that comes with the chassis for more information.

1. Be sure to select the correct slot depending on the operational purpose of the module. The system power may now be powered on or off.
2. Remove the blank face cover from the selected slot, if necessary.
3. Press down on the release catches of the cPCI-3620 ejector handles.
4. **Remove the black plastic caps securing the mounting screws to the front panel.**
5. Align the module's top and bottom edges to the chassis card guides, and then carefully slide the module into the chassis. A slight resistance may be felt when inserting the module. If the resistance it too strong, check if there are bent pins on the backplane or if the board's connector pins are not properly aligned with connectors on the backplane. Then push the board until it is completely flush with the chassis.
6. Push the ejector handles outwards to secure the module in place, and then fasten the screws on the module front panel.
7. Connect the cables and peripherals to the board, and then turn the chassis on if necessary.

5.5 RTM Installation - cPCI-R3610(T)

The installation and removal procedures for a RTM are the same as those for CompactPCI boards. Because they are shorter than front boards, pay careful attention when inserting or removing RTMs.

Refer to previous sections for peripheral connectivity of all I/O ports on the RTM. When installing the cPCI-3620 Series and related RTMs, make sure the RTM is the correct matching model.

NOTE:

You must install the correct RTM to enable functions (I/O interfaces) on the rear panel. Installation of non-compatible RTMs may damage the system board and/or other RTMs.

6 Driver Installation

The cPCI-3620 drivers are available from the ADLINK All-In-One DVD at **X:\cPCI\cPCI-3620**, or from the ADLINK website at (**http://www.adlinktech.com/PD/web/PD_detail.php?cKind=&pid=1335**). ADLINK provides validated drivers for Windows 8. We recommend using these drivers to ensure compatibility. The VxWorks BSP can be downloaded from the cPCI-3620 product page on the ADLINK website (link above).

6.1 cPCI-3620 Drivers

The following describes the cPCI-3620 driver installation procedures for Windows 8. Install the Windows operating system before installing any driver. Most standard I/O device drivers are installed during Windows installation.

1. Before beginning Windows installation, save the AHCI driver to a USB flash drive. During Windows installation, install the AHCI driver from the USB flash drive when prompted.
2. Install the **chipset driver** by extracting and running the program in **...\Chipset\Intel Chipset Device Software_WinAllOS_9.4.4.1005.zip**.
3. Install the **graphics driver** and utilities by extracting and running the program in **...\Graphics\Intel®_HD Graphics_Install_Win8_64bit_10.18.10.3366.zip**.
4. Install the **LAN driver** by running the program in **…\LAN\Intel(R)_Network_Connection_Win8_64_12.6.47.1.exe**.
5. Install the **audio driver** and utilities by extracting and running the program in **…\Audio\Realtek_High Definition Audio_Win7_8_64_6.0.1.6873.zip**.

Drivers for the USB Serial Converter and PCI Simple Communication Controller must be manually installed (e.g. using the Windows Device Manager). Drivers can be found on the ADLINK all-in-one DVD at x:\\cPCI\cPCI-3620 or downloaded from the cPCI-3620 product page on the ADLINK website (link above)

7 Utilities

7.1 SEMA

Hardware monitoring and Watchdog Timer functionality are provided by ADLINK's Smart Embedded Management Agent (SEMA), which operates via a Board Management Controller and communicates with the CPU through the SMBus. A graphical user interface program and command line interface are available to allow you to communicate with SEMA. Please refer to the SEMA user's manuals, available for download from the SEMA product page: **http://www.adlinktech.com/PD/web/PD_detail.php?cKind=&pid=1274**.

7.2 Preboot Execution Environment (PXE)

The cPCI-3620 Series supports the Intel® Preboot Execution Environment (PXE) that is capable of booting up or executing an OS installation through an Ethernet ports. To use PXE, there must be a DHCP server on the network with one or more servers running PXE and MTFTP services. It could be a Windows® 2003 server running DHCP, PXE, and MTFTP services or a dedicated DHCP server with one or more additional servers running PXE and MTFTP services.

To build a network environment with PXE support:

1. Setup a DHCP server with PXE tag configuration
2. Install the PXE and MTFTP services
3. Make a boot image file on the PXE server (i.e. the boot server)
4. Enable the PXE boot function on the client computer

This page intentionally left blank.

Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

A Lithium-type battery may be provided for uninterrupted, backup or emergency power.

Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries appropriately.

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

Getting Service

Contact us should you require any service or assistance.

ADLINK Technology, Inc.
Address: 9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
新北市中和區建一路 166 號 9 樓
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
Address: 5215 Hellyer Avenue, #110
San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.
Address: 上海市浦东新区张江高科技园区芳春路 300 号 (201203)
300 Fang Chun Rd., Zhangjiang Hi-Tech Park
Pudong New Area, Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology Beijing
Address: 北京市海淀区上地东路 1 号盈创动力大厦 E 座 801 室(100085)
Rm. 801, Power Creative E, No. 1 Shang Di East Rd.
Beijing, 100085 China
Tel: +86-10-5885-8666
Fax: +86-10-5885-8626
Email: market@adlinktech.com

ADLINK Technology Shenzhen
Address: 深圳市南山区科技园南区高新南七道 数字技术园
A1 栋 2 楼 C 区 (518057)
2F, C Block, Bldg. A1, Cyber-Tech Zone, Gao Xin Ave. Sec. 7
High-Tech Industrial Park S., Shenzhen, 518054 China
Tel: +86-755-2643-4858
Fax: +86-755-2664-6353
Email: market@adlinktech.com

LiPPERT ADLINK Technology GmbH
Address: Hans-Thoma-Strasse 11, D-68163
Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: emea@adlinktech.com

ADLINK Technology, Inc. (French Liaison Office)
Address: 6 allée de Londres, Immeuble Ceylan
91940 Les Ulis, France
Tel: +33 (0) 1 60 12 35 66
Fax: +33 (0) 1 60 12 35 66
Email: france@adlinktech.com

ADLINK Technology Japan Corporation
Address: 〒101-0045 東京都千代田区神田鍛冶町 3-7-4
神田 374 ビル 4F
KANDA374 Bldg. 4F, 3-7-4 Kanda Kajicho,
Chiyoda-ku, Tokyo 101-0045, Japan
Tel: +81-3-4455-3722
Fax: +81-3-5209-6013
Email: japan@adlinktech.com

ADLINK Technology, Inc. (Korean Liaison Office)
Address: 137-881 서울시 서초구 서초대로 326, 802 (서초동, 모인터빌딩)
802, Mointer B/D, 326 Seocho-daero, Seocho-Gu,
Seoul 137-881, Korea
Tel: +82-2-2057-0565
Fax: +82-2-2057-0563
Email: korea@adlinktech.com

ADLINK Technology Singapore Pte. Ltd.
Address: 84 Genting Lane #07-02A, Cityneon Design Centre
Singapore 349584
Tel: +65-6844-2261
Fax: +65-6844-2263
Email: singapore@adlinktech.com

ADLINK Technology Singapore Pte. Ltd. (Indian Liaison Office)
Address: #50-56, First Floor, Spearhead Towers
Margosa Main Road (between 16th/17th Cross)
Malleswaram, Bangalore - 560 055, India
Tel: +91-80-65605817, +91-80-42246107
Fax: +91-80-23464606
Email: india@adlinktech.com

ADLINK Technology, Inc. (Israeli Liaison Office)
Address: 27 Maskit St., Corex Building
PO Box 12777
Herzliya 4673300, Israel
Tel: +972-77-208-0230
Fax: +972-77-208-0230
Email: israel@adlinktech.com

ADLINK Technology, Inc. (UK Liaison Office)
Tel: +44 774 010 59 65
Email: UK@adlinktech.com